



IFW

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Int'l Application of
Lee W. Marriott et al.
Serial No. 10/763,990
Filed: January 23, 2004
Title: INTEGRATED HVACR CONTROL
AND PROTECTION SYSTEM

)
) Group: 2125
)
) Examiner: Maria N. Van Buhr
)
)

LETTER

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Applicants hereby wish to bring to the attention of the Examiner the International Preliminary Report on Patentability which has been issued in the corresponding International Application No. PCT/US2004/001983, a copy of which is attached hereto.

Respectfully submitted,

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Registration No. 53,038

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Enc. IPRP

CERTIFICATION OF MAILING

I HEREBY CERTIFY THAT THIS correspondence is being deposited with the United States Postal Service as First Class Mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on: November 29, 2005.

JASON A. HOUSER, REG. NO. 53,038

Name of Registered Representative

Signature

November 29, 2005

Date

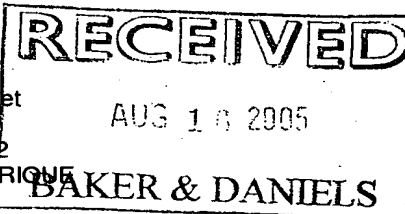
PATENT COOPERATION TREATY

From the INTERNATIONAL BUREAU

PCTNOTIFICATION CONCERNING
TRANSMITTAL OF COPY OF INTERNATIONAL
PRELIMINARY REPORT ON PATENTABILITY
(CHAPTER I OF THE PATENT COOPERATION
TREATY)

(PCT Rule 44bis.1(c))

To:

HOFFMAN, John
Baker & Daniels
111 East Wayne Street
Suite 800
Fort Wayne, IN 46802
ETATS-UNIS D'AMERIQUEDate of mailing (*day/month/year*)
11 August 2005 (11.08.2005)Applicant's or agent's file reference
TEC1290.WO

IMPORTANT NOTICE

International application No.
PCT/US2004/001983International filing date (*day/month/year*)
23 January 2004 (23.01.2004)Priority date (*day/month/year*)
24 January 2003 (24.01.2003)

Applicant

TECUMSEH PRODUCTS COMPANY et al

The International Bureau transmits herewith a copy of the international preliminary report on patentability (Chapter I of the Patent Cooperation Treaty)

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Facsimile No.+41 22 740 14 35

Authorized officer

Simin Baharlou

Facsimile No.+41 22 338 71 30

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY (Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44bis)

Applicant's or agent's file reference TEC1290.WO	FOR FURTHER ACTION	See item 4 below
International application No. PCT/US2004/001983	International filing date (<i>day/month/year</i>) 23 January 2004 (23.01.2004)	Priority date (<i>day/month/year</i>) 24 January 2003 (24.01.2003)]
International Patent Classification (IPC) or national classification and IPC 7 F25B 49/00, F24F 11/00		
Applicant TECUMSEH PRODUCTS COMPANY		

1.	This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 bis.1(a).																								
2.	This REPORT consists of a total of 10 sheets, including this cover sheet.																								
In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead.																									
3.	<p>This report contains indications relating to the following items:</p> <table style="width: 100%;"> <tr> <td style="width: 10%; text-align: center;"><input checked="" type="checkbox"/></td> <td style="width: 30%;">Box No. I</td> <td style="width: 60%;">Basis of the report</td> </tr> <tr> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td>Box No. II</td> <td>Priority</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. III</td> <td>Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</td> </tr> <tr> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td>Box No. IV</td> <td>Lack of unity of invention</td> </tr> <tr> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td>Box No. V</td> <td>Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. VI</td> <td>Certain documents cited</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. VII</td> <td>Certain defects in the international application</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. VIII</td> <td>Certain observations on the international application</td> </tr> </table>	<input checked="" type="checkbox"/>	Box No. I	Basis of the report	<input checked="" type="checkbox"/>	Box No. II	Priority	<input type="checkbox"/>	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability	<input checked="" type="checkbox"/>	Box No. IV	Lack of unity of invention	<input checked="" type="checkbox"/>	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement	<input type="checkbox"/>	Box No. VI	Certain documents cited	<input type="checkbox"/>	Box No. VII	Certain defects in the international application	<input type="checkbox"/>	Box No. VIII	Certain observations on the international application
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<input type="checkbox"/>	Box No. VII	Certain defects in the international application																							
<input type="checkbox"/>	Box No. VIII	Certain observations on the international application																							
4.	The International Bureau will communicate this report to designated Offices in accordance with Rules 44bis.3(c) and 93bis.1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44bis .2).																								

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Date of issuance of this report 29 July 2005 (29.07.2005)
Facsimile No. +41 22 740 14 35	Authorized officer <div style="text-align: center; font-weight: bold;">Simin Baharlou</div>
Telephone No. +41 22 338 71 30	

PATENT COOPERATION TREATY

REC'D 23 DEC 2004

WIPO PCT

PCT

From the
INTERNATIONAL SEARCHING AUTHORITY

To:

see form PCT/ISA/220

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.
PCT/US2004/001983

International filing date (day/month/year)
23.01.2004

Priority date (day/month/year)
24.01.2003

International Patent Classification (IPC) or both national classification and IPC
F25B49/00, F24F11/00

Applicant
TECUMSEH PRODUCTS COMPANY

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☒ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☒ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA:



European Patent Office - P.B. 5818 Patentlaan 2
NL-2280 HV Rijswijk - Pays Bas
Tel. +31 70 340 - 2040 Tx: 31 651 epo nl
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Authorized Officer

De Graaf, J.D.

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**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/US2004/001983

Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
 - ☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material:
 - ☐ a sequence listing
 - ☐ table(s) related to the sequence listing
 - b. format of material:
 - ☐ in written format
 - ☐ in computer readable form
 - c. time of filing/furnishing:
 - ☐ contained in the international application as filed.
 - ☐ filed together with the international application in computer readable form.
 - ☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/US2004/001983

Box No. II Priority

1. ☒ The following document has not been furnished:

☒ copy of the earlier application whose priority has been claimed (Rule 43*bis*.1 and 66.7(a)).

☐ translation of the earlier application whose priority has been claimed (Rule 43*bis*.1 and 66.7(b)).

Consequently it has not been possible to consider the validity of the priority claim. This opinion has nevertheless been established on the assumption that the relevant date is the claimed priority date.

2. ☐ This opinion has been established as if no priority had been claimed due to the fact that the priority claim has been found invalid (Rules 43*bis*.1 and 64.1). Thus for the purposes of this opinion, the international filing date indicated above is considered to be the relevant date.

3. ☐ It has not been possible to consider the validity of the priority claim because a copy of the priority document was not available to the ISA at the time that the search was conducted (Rule 17.1). This opinion has nevertheless been established on the assumption that the relevant date is the claimed priority date.

4. Additional observations, if necessary:

Box No. IV Lack of unity of invention

1. ☒ In response to the invitation (Form PCT/ISA/206) to pay additional fees, the applicant has:

☒ paid additional fees.

☐ paid additional fees under protest.

☐ not paid additional fees.

2. ☐ This Authority found that the requirement of unity of invention is not complied with and chose not to invite the applicant to pay additional fees.

3. This Authority considers that the requirement of unity of invention in accordance with Rule 13.1, 13.2 and 13.3 is

☐ complied with

☒ not complied with for the following reasons:

see separate sheet

4. Consequently, this report has been established in respect of the following parts of the international application:

☒ all parts.

☐ the parts relating to claims Nos.

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/US2004/001983

Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	
	No: Claims	1-22
Inventive step (IS)	Yes: Claims	
	No: Claims	1-22
Industrial applicability (IA)	Yes: Claims	1-22
	No: Claims	

2. Citations and explanations

see separate sheet

Re Item IV.

The separate inventions / groups of inventions are:

Invention 1: Claims 1-11,17-22

A control and protection system for an environmental conditioning system comprising a first microcontroller, a temperature input, at least two sensor circuits selected from a group consisting of: a power sensor, a voltage sensor, a current sensor or a terminal pin venting sensor and a user control all coupled to said first microcontroller; and a plurality of switching devices driven by said first microcontroller.

Invention 2: Claims 12-16

A control and protection system for an environmental conditioning system comprising a microcontroller, a temperature input, a plurality of modules selected from a group consisting of: a power sensor circuit, a voltage sensor circuit, a current sensor circuit or a terminal pin venting sensor circuit; and a user control, all coupled to said microcontroller; and a plurality of switching devices driven by said microcontroller, wherein any of said plurality of modules may be individually excluded from the control and protection system without affecting the functionality of the remaining ones of said plurality of modules.

They are not so linked to form a single general inventive concept (Rule 13.1 PCT) for the following reasons:

EP-0748991-A2 (Sanyo Electric, 18-12-1996) describes a control and protection system for an environmental conditioning system (10) comprising a first microcontroller (102FD), a temperature input (110AD,110BD), at least two sensor circuits (see col. 34, lines 31-41, col. 30 lines 49-54, col. 31, lines 23-43) selected from a group consisting of: a power sensor, a voltage sensor, a current sensor or a terminal pin venting sensor and a user control (item 44), all coupled to said first microcontroller (102FD); and a plurality of switching devices driven by said first microcontroller (102FD).

Said user control (item 44) also includes a wireless transceiver (claim 2), the system further comprising software including operating parameters (claim 3), the user control (44) is capable of transmitting at least one of said operating parameters (e.g. room temperature set point) to said microcontroller (102FD) (claim 4), said user control is capable of changing limits (claim 5) and said power sensor is measuring real power

(this is in particular true for the inverter supply DC power sensor) (claim 6). The system comprises a circuit card (control board 102D, see fig. 20) where to said first microcontroller (102FD) is mounted (see fig. 20). In EP-074899-A2 there is no disclosure of a mounting of the at least two sensor circuits to said circuit card (claim 7). This feature solves the problem of an cost efficient control design with a microprocessor and associated sensing circuits mounted on one circuit card.

The essential differences between the second invention (claim 12) and EP-0748991-A2 are the plurality of modules for sensing power, voltage or terminal pin venting wherein any one of these modules may be individually excluded from the control and protection system without affecting the functionality of the remaining ones. This feature therefor has to be considered as the special technical feature of the second invention. The second invention is now solving the problem of tailoring a control and protection system to specific HVACR system needs, by offering the possibility of only including those modular sensing circuits that are really required for an application.

As the inventions 1 and 2 have neither common special technical features nor corresponding technical features since they both solve different not related problems, a technical relationship among these inventions (Rule 13.2 PCT) can not be present and consequently the application lacks unity of invention (Rule 13.1 PCT).

Re Item V.

1 The following documents are referred to in this communication:

- D1 : EP 0 748 991 A (SANYO ELECTRIC CO) 18 December 1996 (1996-12-18)
- D2 : US 6 082 122 A (MORITA ISAO ET AL) 4 July 2000 (2000-07-04)
- D3 : US 6 145 328 A (CHOI KWANG-SOO) 14 November 2000 (2000-11-14)
- D4 : US 5 440 895 A (HERROON GREGORY P ET AL) 15 August 1995 (1995-08-15)
- D5: US 6 509 654 A (GUNTER CILIOX ET AL) 21 January 2003 (2003-21-01)

2 Independent claim 1

- 2.1 The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 1 is not new in the sense of Article 33(2) PCT.

Document D1 discloses (see e.g. the third embodiment, col.34, lines 31-54 wherein it is stated that exterior unit 12D and the commercial power supplying unit SOL are controlled in common by the same microcontroller 102FD, fig. 18-20, and the description for embodiments 1 and 2, the references in parenthesis applying to this document): A control and protection system (72D,102D) for an environmental conditioning system (10) comprising a first microcontroller (102FD); a temperature input (110AD,110BD,110CD) coupled to said first microcontroller (102FD); at least two sensor circuits (see col. 30, lines 49-54, col. 31, lines 24-39 and col. 314, lines 31-36, the voltage at the A/D converter, the current from the current transformer and the generated and consumed power are sensed and inputted into microcontroller 102D) selected from a group of: a power sensor circuit, a voltage sensor circuit, a current sensor circuit and a terminal pin venting circuit; a user control (14D, 44, a remote controller) coupled to said first microcontroller (102FD); and a plurality of switching devices (312D,316D,102ED,112BD) driven by said first microcontroller (102FD) and adapted to control components of the environmental conditioning system (10), said first microcontroller (102FD) driving said plurality of switching devices in response to evaluating signals received from said user control (14D,44), said temperature input (110AD,110BD,110CD) and said at least two sensor circuits.

- 2.2 Documents D2, D3 and D4 also disclose the subject matter of claim 1.

3 Independent claim 12

- 3.1 The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 12 is not new in the sense of Article 33(2) PCT.

Document D5 discloses (the references in parenthesis applying to this document): A control and protection system (10) for an environmental conditioning system (2, 2.1, 2.2, 2.3, 2.4, 2.5, 2.6) comprising a microcontroller (central control device 6), a voltage sensing circuit (1.7) and a current sensing circuit (1.6) coupled to said microcontroller, wherein any one of said sensing circuits may be individually excluded from the control and protection system without affecting the functionality of the remaining sensing circuit(s) (see e.g. D5, col 3, lines 9-18), a temperature input (1.3) coupled to said microcontroller (6), a user control (programming and keying device 3.1) coupled to said microcontroller (6) and a plurality of switching devices (2.1, 2.2, 2.3 etc.) driven by said microcontroller (6) and adapted to control components of the environmental control system in response to said microcontroller (6) evaluating signals received from said user control (3.1), said temperature input (1.3) and said plurality of sensing circuits (1.6, 1.7).

4 Independent claim 17

- 4.1 The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 17 is not new in the sense of Article 33(2) PCT.

Document D1 discloses (the references in parenthesis applying to this document): A control and protection system (72D, 102FD) for an environmental conditioning system (10) comprising; a local control (102D) having a first microcontroller (102FD); a temperature input (110AD, 110BD, 110CD) coupled to said microcontroller (102FD); an electrical sensing circuit (see again col. 30, lines 49-54, col. 31, lines 24-39 and col. 314, lines 31-36, the voltage at the A/D converter, the current from the current transformer and the generated and consumed power are sensed and inputted into microcontroller 102D) mounted on said local controller (102D) and coupled to said first microcontroller (102FD); a remote control (14D, 44) having a second microcontroller; a user control (430, the buttons) mounted on said remote control (14D, 44) and coupled to said second

microcontroller; a plurality of switching devices (312D,316D,102ED,112BD) driven by said first microcontroller (102FD) and adapted to control components of the environmental conditioning system (10), said first microcontroller (102FD) driving said plurality of switching devices in response to evaluating signals received from said user control (14D,44), said temperature input (110AD,110BD,110CD) and said electrical sensing circuit.

5 Dependent claims 2-11, 13-16 and 18-22

Dependent claims 2-11, 13-16 and 18-22 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of novelty step (Article 33(2) PCT).

6 Industrial applicability

The subject matter of claims 1-22 is deemed to be industrially applicable in accordance with Art. 33(4) PCT.